

Alaska Monitoring and Assessment Program (AKMAP): Preliminary findings from the coastal northeastern Chukchi Sea, 2010

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Abstract

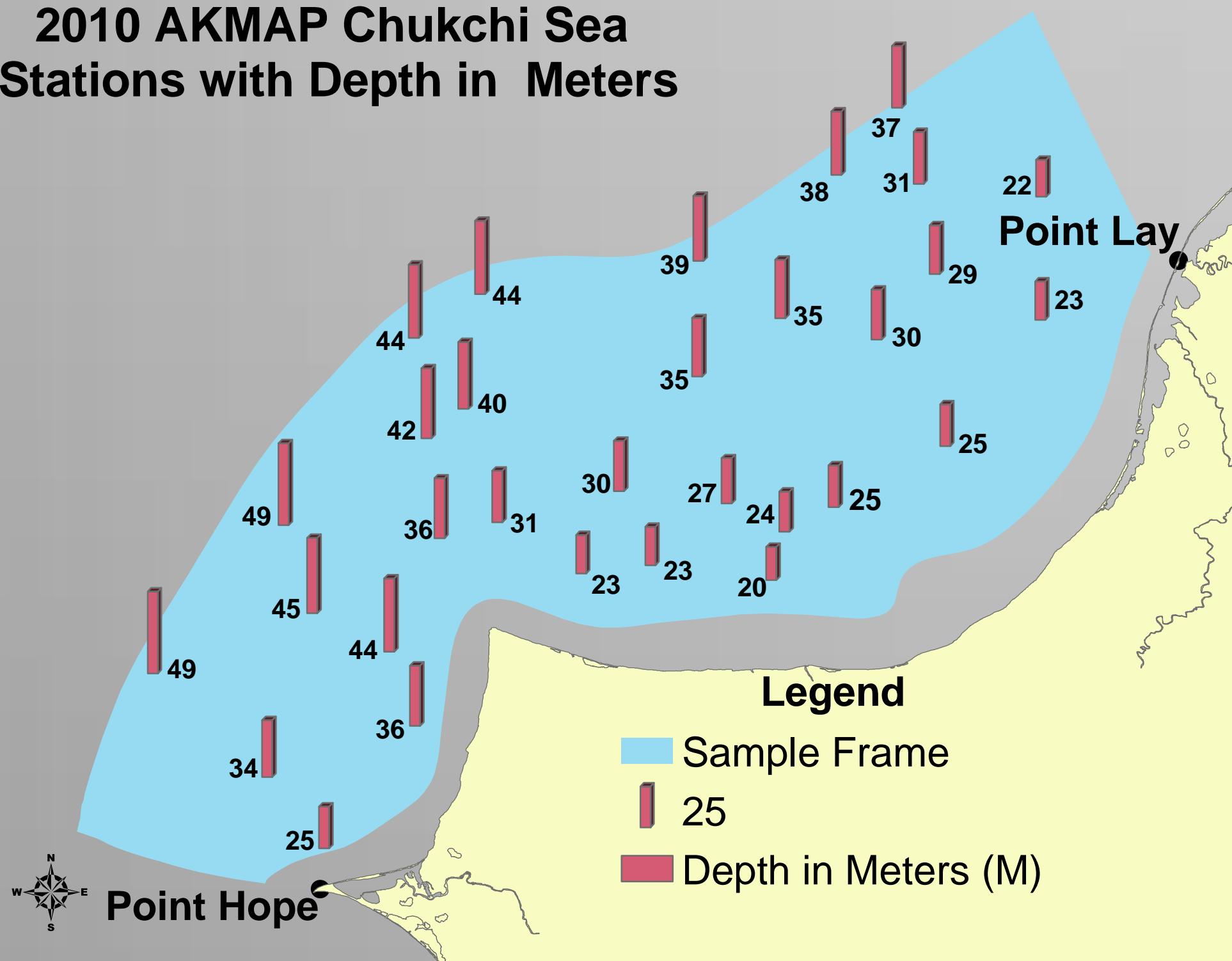
The Alaska Department of Environmental Conservation (ADEC) and University of Alaska School of Fisheries and Ocean Sciences (SFOS), Fairbanks established an Alaska Monitoring and Assessment Program (AKMAP) focused on conducting aquatic-resource surveys of Alaska's waters. ADEC and SFOS conducted research cruises aboard the R/V Norseman II in the fall of 2010 and 2011 to survey and monitor the Chukchi Sea coastal environment. This survey's goal is to assess the water quality (WQ) and ecological status of waters of the northeastern Chukchi Sea from Pt. Hope to Barrow in waters 10–50 m in depth within the Beaufort/Chukchi coastal-shelf ecosystem.

We sampled 64 stations over two years using the following activities at most stations: CTD/WQ; plankton tow; drop camera; van Veen grab for sediment chemistry & macroinvertebrates; beam and otter trawls; biological-contaminant samples; and sediment- and biological-isotope samples. Also, surveys were conducted for marine birds and mammals during transit between stations.

The AKMAP assessment estimated the spatial extent of water quality based on stressors such as contaminants, water parameters (pH, temperatures, salinity, and dissolved oxygen), and upper trophic level taxa such as benthic fishes, marine birds, and mammals. Environmental managers utilize this information to support the protection and restoration of coastal marine environments, mitigate damage to marine ecosystem, and implement discharge-monitoring requirements in National Pollution Discharge Elimination System permits. Findings are anticipated to be available by late 2012.

This presentation shows preliminary findings from the 2010 Chukchi Sea survey.

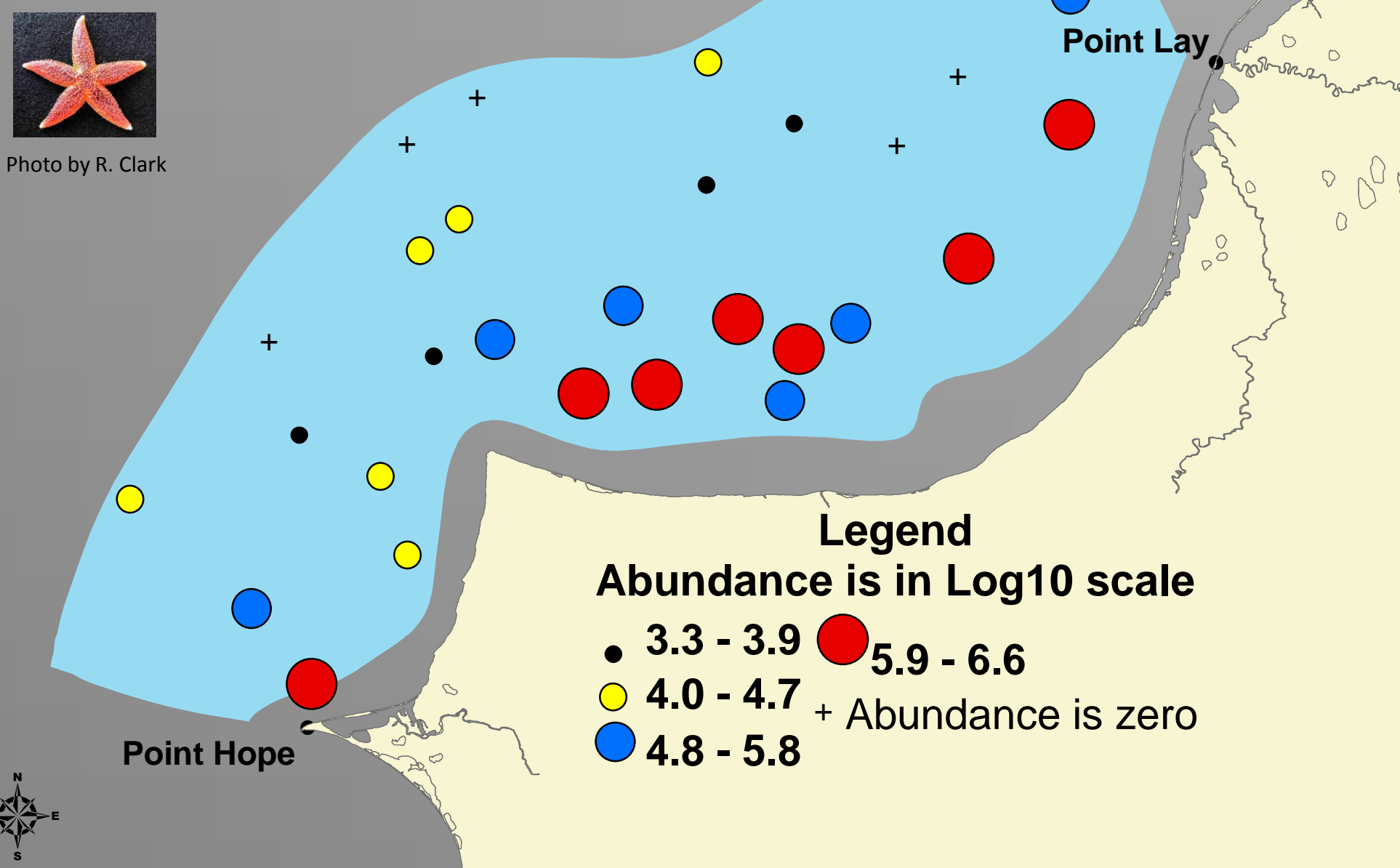
2010 AKMAP Chukchi Sea Stations with Depth in Meters



2010 Preliminary Biological Findings Epifauna

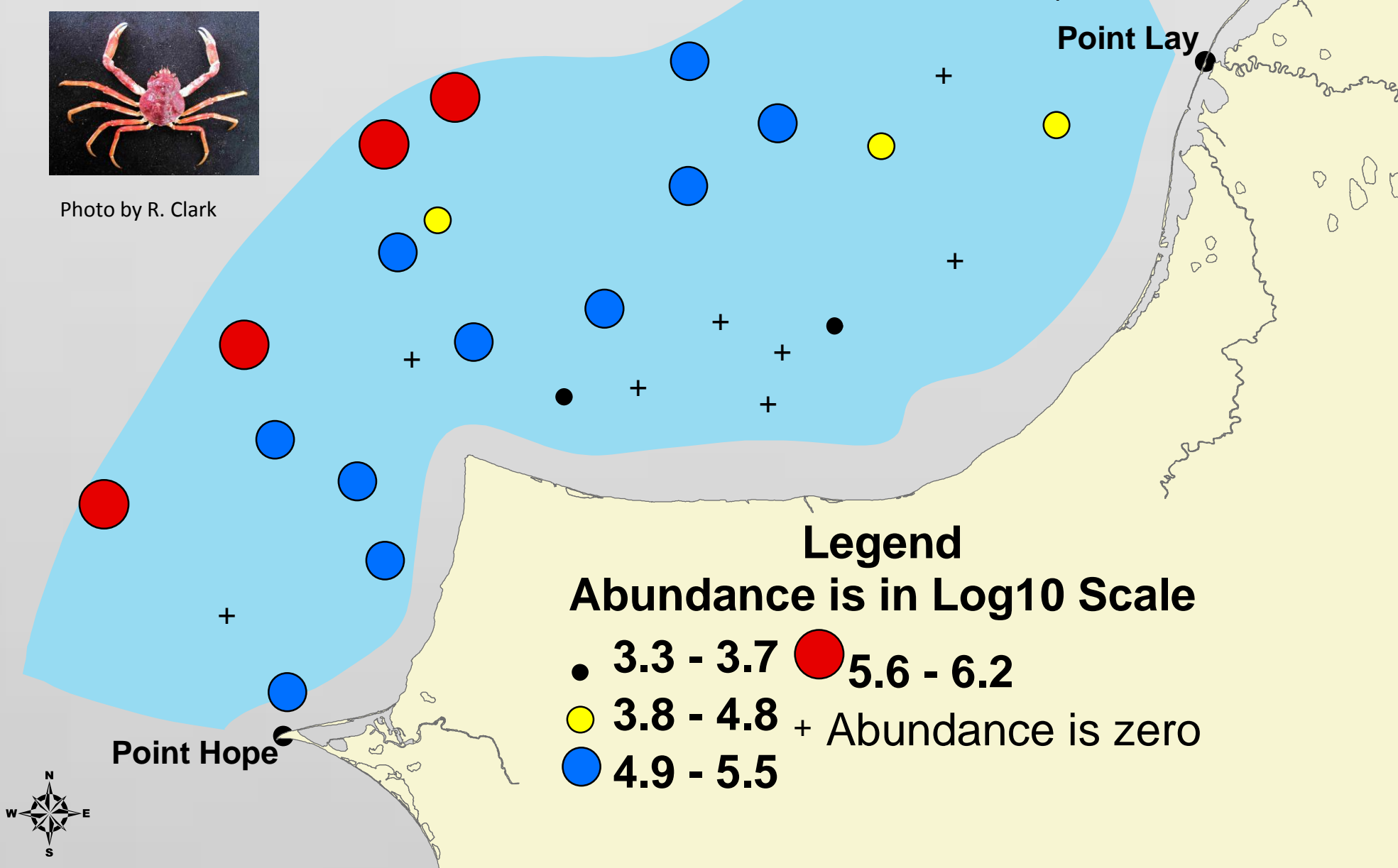
Epibenthic invertebrates were sampled from beam trawls hauls at 30 of the 31 stations. Beam trawls were quantitative for areas fished at all sites other than AKCH10-20, where two tons of sand dollars were collected, bending the beam trawl and requiring repairs. The four most abundant epibenthic invertebrates collected are shown in the following maps.

Sea Star, *Asterias spp.*, Abundance per km² Observed at 2010 Stations

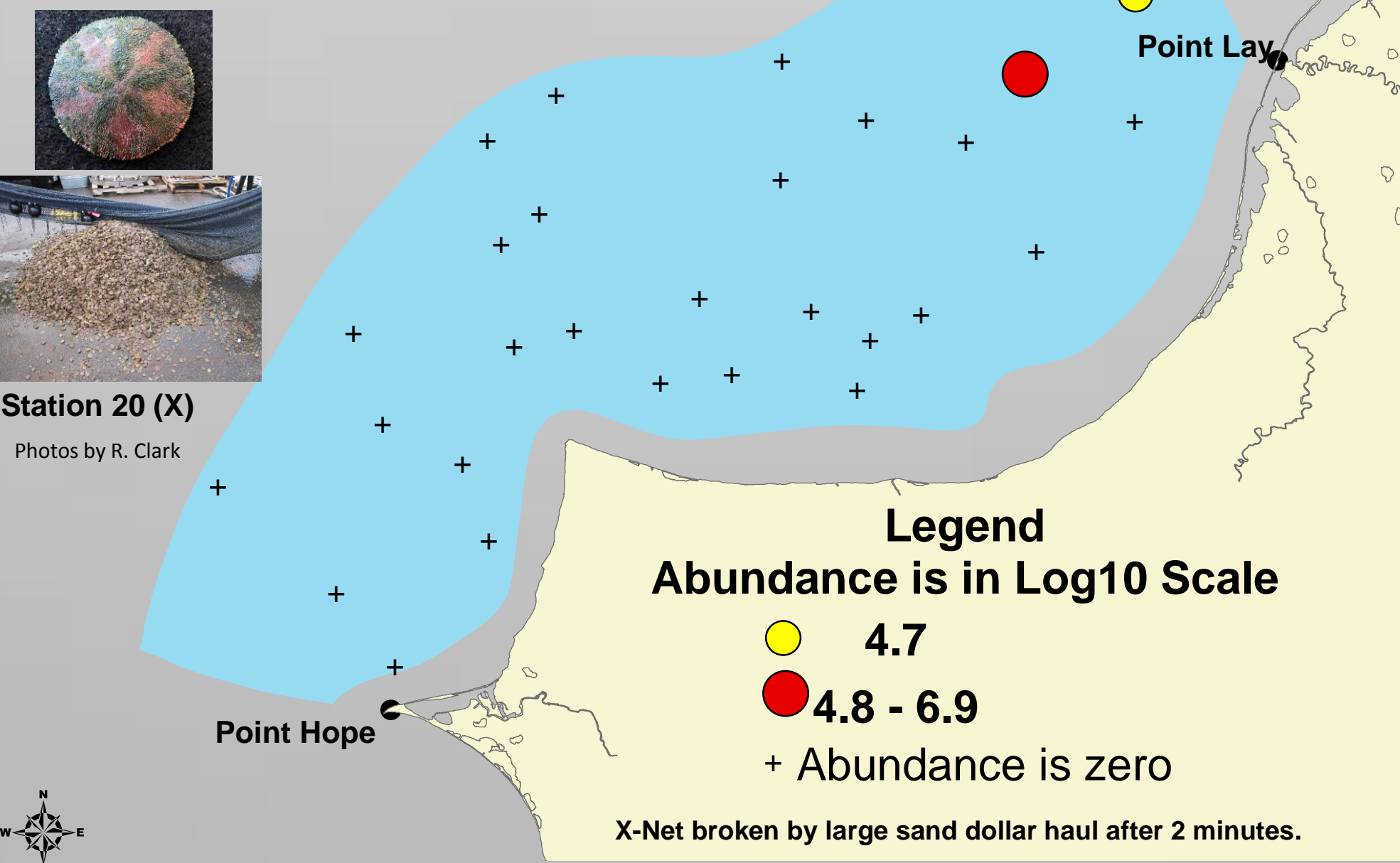


The 2010 and 2011 data will be statistical analyzed in 2012 to evaluate correlations between the biological distribution of epifauna, fish, and macroinvertebrates and water column and sediment variables. Additional information, including copies of the 2010 and 2011 AKMAP Chukchi Sea Alaska Science Symposium posters and cruise reports, can be found at <http://www.dec.state.ak.us/water/wqsar/monitoring/chukchisea.html>

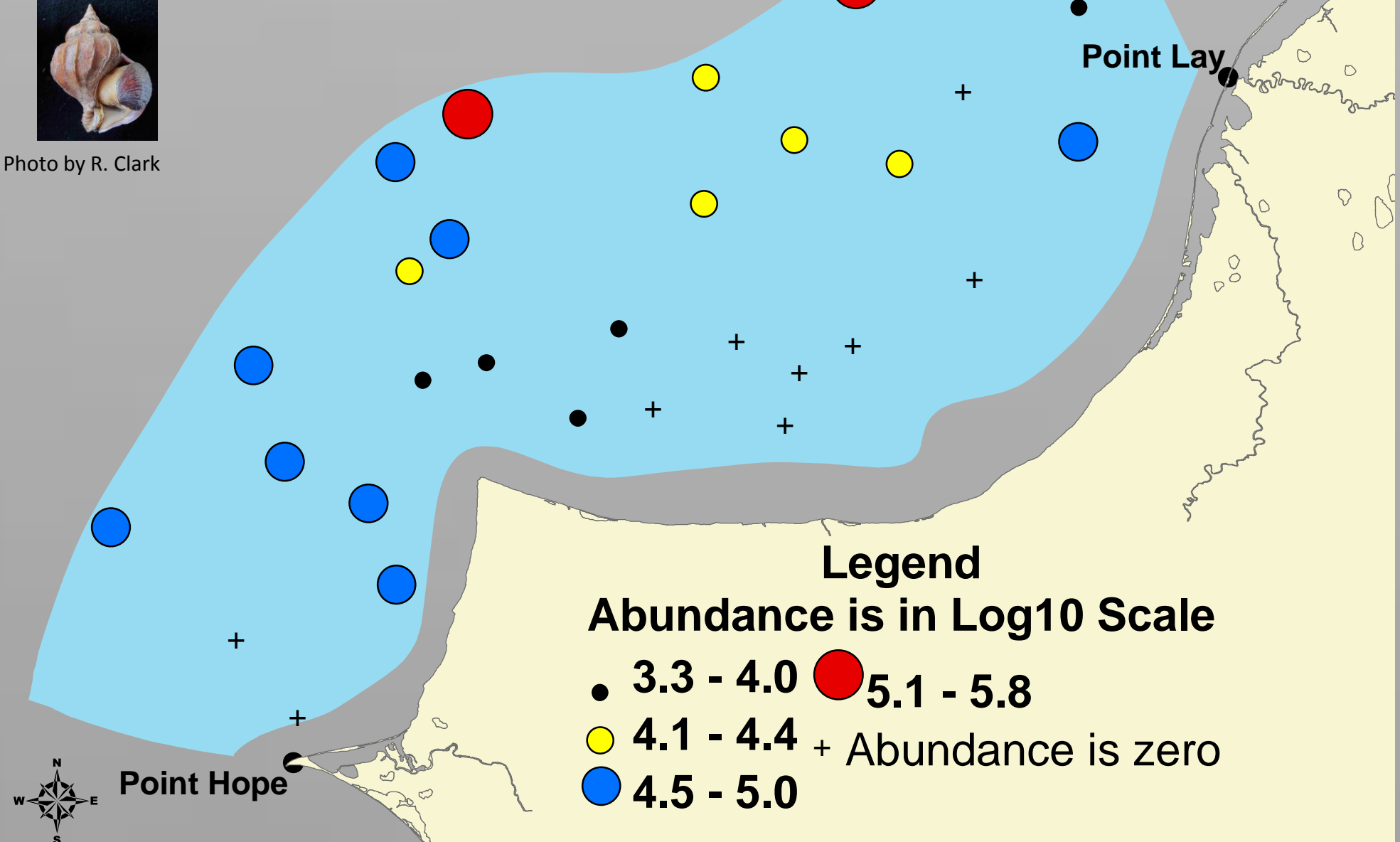
Snow Crab, *Chionoecetes opilio* Abundance per km² Observed at 2010 Stations



Sand Dollar, *Echinarachnius parma* Abundance per km² Observed at 2010 Stations



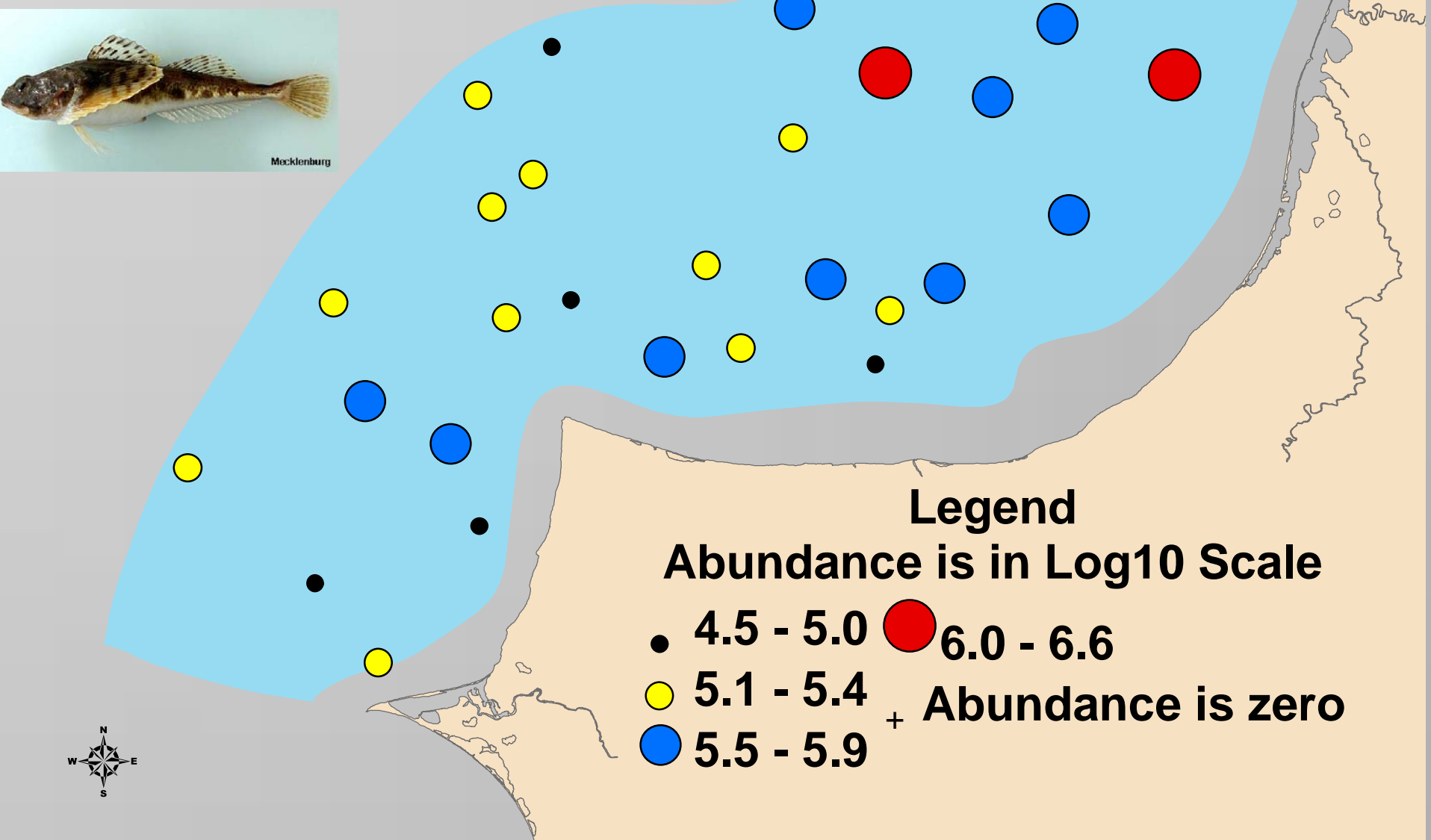
Heros Neptune, *Neptunea heros* Abundance per km² Observed at 2010 Stations



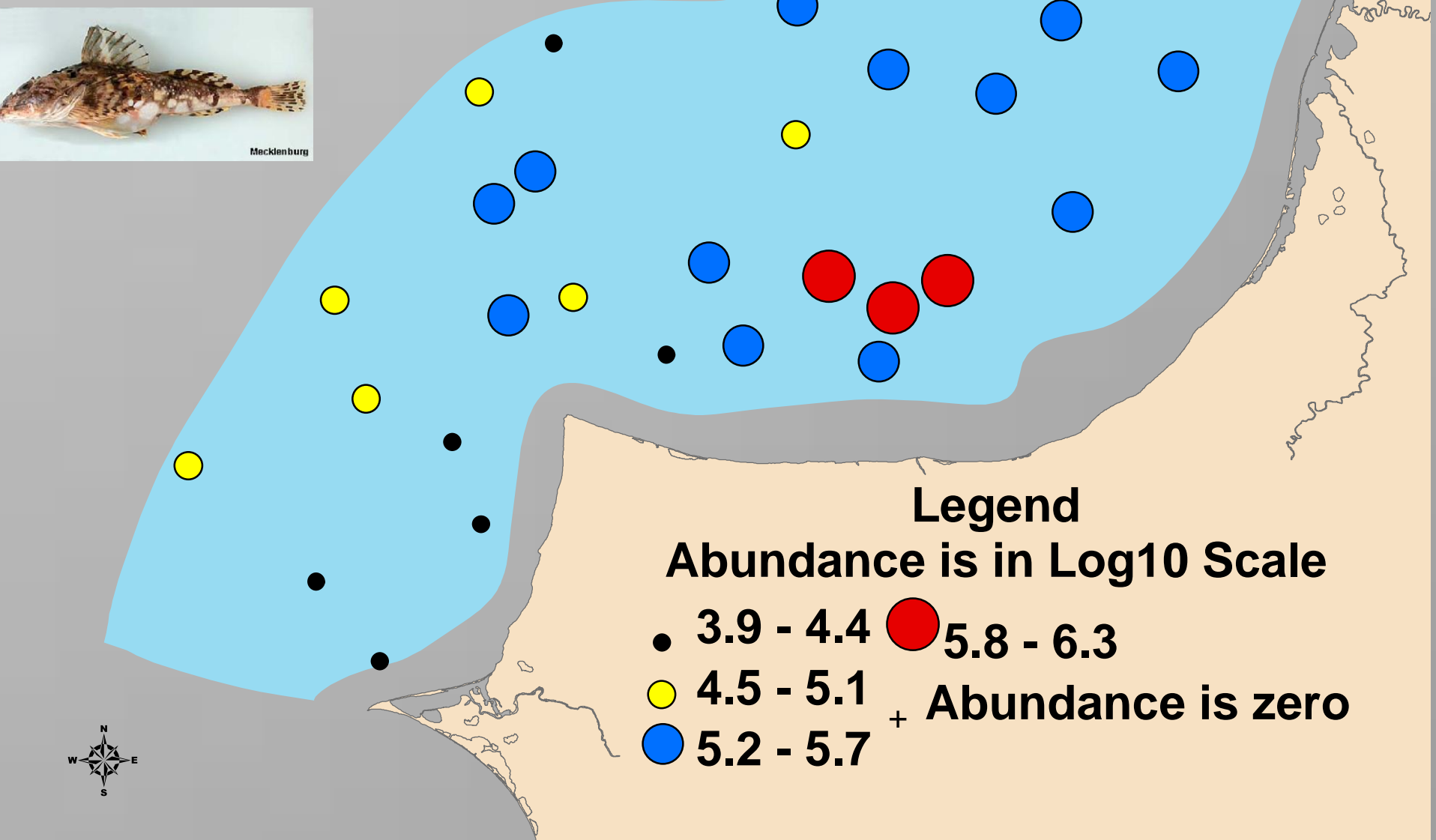
Fish Abundance

Demersal fishes are reported from the 30 stations that were sampled quantitatively by beam trawl. Abundance over all species was higher in the northern part of the AKCH10 study area. The sculpins Arctic staghorn sculpin and shorthorn sculpin, and the prickleback slender eelblenny, were present at nearly all stations. Shorthorn sculpin were somewhat more abundant north of Cape Lisburne. The flatfish yellowfin sole was most abundant nearshore. Arctic staghorn sculpin, shorthorn sculpin and yellowfin sole are shown in the following maps.

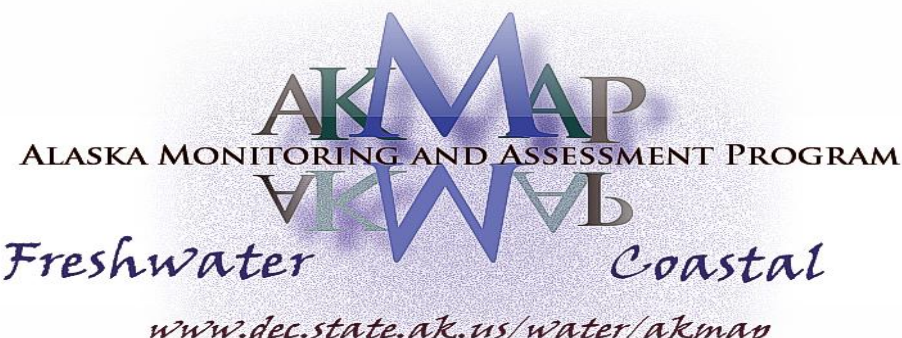
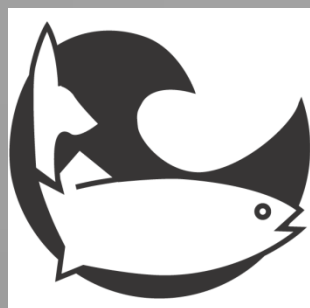
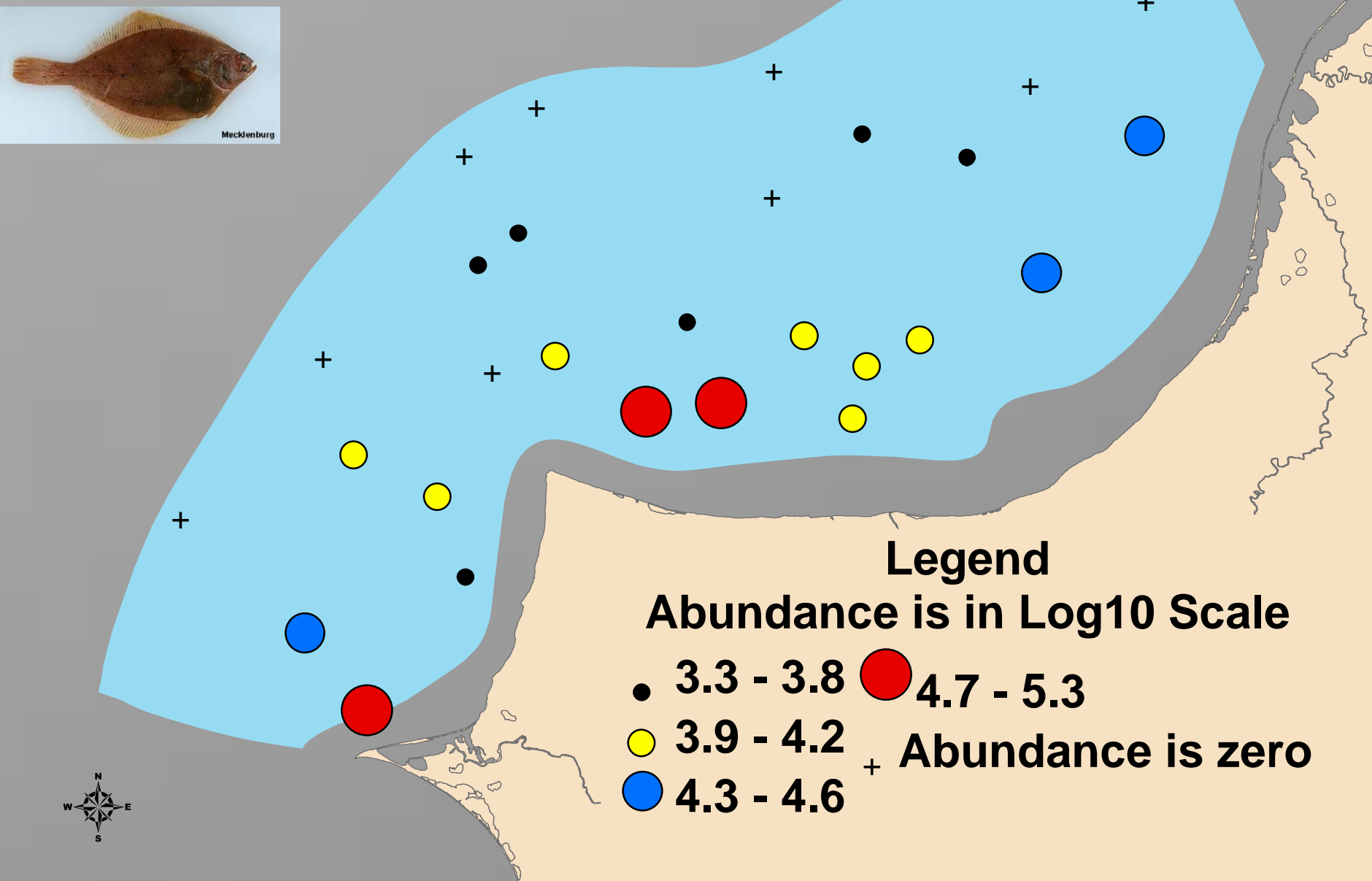
Arctic staghorn sculpin *Gymnocephalus tricuspis* Abundance per km² Observed at 2010 Stations



Shorthorn Sculpin *Myoxocephalus scorpius* Abundance per km² Observed at 2010 Stations



Yellowfin sole, *Limanda aspera* Abundance per km² Observed at 2010 Stations



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